

Name _____

Date _____

Period _____

**Function
Transformations****Slides, Reflections, and Rotations**

Show all work. No work = No credit. Use only pencil.

Answer the questions below while using the interactives at:

<http://function-transformations.wikispaces.com/>**Answer the following questions using the function $m(x)$:**

1. For the function
- $m(x)$
- , complete the following table:

x	$m(x)$
-3	
-1	1
0	
1	5
2	
3	
4	

2. Let
- $f(x) = 2m(x - 2)$
- . Complete the following table to see the resulting transformation.

x	$x - 2$	$m(x - 2)$	$f(x) = 2m(x - 2)$	$(x, f(x))$
-1	-3	0	0	$(-1, 0)$
1	-1	1		
2		-1		
3	1	5		
4			-2	$(4, -2)$
5	3			
6		2		

3. Use the applet and reflect, translate, and dilate as necessary to transform the function as indicated in the table above. Record the "rules" for the transformation:

a. x-coordinate: The text in parentheses say " $x - 2$." The transformation was:

b. y-coordinate: The text says $2m$. The transformation performed was:

4. Reset the applet. Let $f(x) = -m(x + 3) + 2$. Use the table you created in problem 1 to create the table for the transformed function. This time, look at the expression in parentheses and “do the opposite” to the x-coordinate. Perform the operations as listed to the y-coordinates.

x	$m(x)$	$x_n = x - 3$	$f(x) = -m(x) + 2$	$(x_n, f(x))$
-3	0		2	(-6, 2)
-1		-4		
0			3	
1	5	-2		(-2, -3)
2				
3	-1	0		
4			0	(1, 0)

5. Use the applet to transform $m(x)$ to the function indicated in the table above. What do you surmise?

Answer the following questions using the function $h(x)$:

6. The function, $f(x)$, results from the following transformation of $h(x)$: There is a y-axis reflection, the domain is $[-4, 4]$, and the range is $[0, 8]$. Determine the equation of $f(x)$. Write your equation below.
7. Click on the “Show equation” checkbox to see if your equation matches the actual equation. If not, go through the transformation with the checkbox selected to see the equation as it changes.
8. The function, $f(x)$, results from the following transformation of $h(x)$: There is an x-axis reflection, the domain is $[-8, 8]$, and the range is $[-2, 5]$. Determine the equation of $f(x)$. Use the applet to confirm your equation.
9. The function, $f(x)$, results from the following transformation of $h(x)$: The function is rotated about the origin; the domain is $[-1, 7]$ and the range is $[3, 5]$. Determine the equation of $f(x)$. Use the applet to confirm your equation.

Perform the following using the function $i(x)$:

10. Experiment with the Function Transformer and record the effect of the following transformations on $i(x)$:

Equation	Effect
$f(x) = i(x + a)$	
$f(x) = i(x) + a$	
$f(x) = i(ax)$	
$f(x) = ai(x)$	
$f(x) = i(-x)$	
$f(x) = -f(x)$	